AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method for manufacturing molten iron, comprising:

producing reducing material of mixed hot fine direct reduced iron and calcined additives, the reducing material being produced from multiple fluidized beds;

charging the reducing material to at least one pair of roller presses;

roll pressing the reducing material through the one pair of roller presses to produce continuous compacted material having protruded portions adjacent to each other and line-shaped concave grooves formed between the protruded portions on pressed surfaces;

crushing the compacted material;

charging the crushed compacted material to a coal packed bed; and

supplying oxygen to the coal packed bed to manufacture molten iron,

wherein the protruded portions and the line-shaped concave grooves are uniformly and continuously formed on an outer surface of the compacted materials along an axial direction of the at least one pair of roller presses, and

wherein the compacted material is formed such that acute and obtuse angles are formed between a center line formed along a length of a cross section that is cut along a lengthwise direction perpendicular to an axial direction of the roller presses and connecting lines that connect the line-shaped concave grooves closest to each other across the cross sectional area.

2. (Previously Presented) The method of claim 1, further comprising charging the reducing material in two slanted directions at acute angles to a direction perpendicular to the roller presses.

3. (Previously Presented) The method of claim 1, wherein the compacted material has a thickness of 3 mm to 30 mm and a density of 3.5 tons/m^3 to 4.2 tons/m^3.

4. (Previously Presented) The method of claim 1, wherein the crushed compacted material has an average grain size of 50 mm or less and an irregular shape.

5. (Previously Presented) The method of claim 1, further comprising:

bypassing the crushed compacted material;

cooling the bypassed compacted material; and

storing the cooled compacted material.

6. (Previously Presented) The method of claim 1, further comprising performing a second crushing process of the crushed compacted material in the case where an average grain size of the crushed compacted material exceeds 30 mm.

7. (Previously Presented) The method of claim 1, further comprising supplying nitrogen in each step.

8. (Previously Presented) The method of claim 1, further comprising:

collecting dust particles generated in each step;

wet scrubbing the collected dust particles;

removing moisture from the wet scrubbed dust particles; and

discharging the dust particles from which moisture has been removed to the outside.

9. (Currently Amended) A method for manufacturing molten iron, comprising:

producing hot fine direct reduced iron from fluidized beds;

charging the fine direct reduced iron to at least one pair of roller presses;

roll pressing the fine directed reduced iron through the one pair of roller presses to produce continuous compacted material having <u>protruded portions adjacent to each other and line-shaped concave</u> grooves formed <u>between the protruded portions</u> on pressed surfaces;

crushing the compacted material;

charging the crushed compacted material to a coal packed bed; and

supplying oxygen to the coal packed bed to manufacture molten iron,

wherein the protruded portions and the line-shaped concave grooves are uniformly and continuously formed on an outer surface of the compacted materials along an axial direction of the at least one pair of roller presses, and

wherein from a cross section along a lengthwise direction of the compacted material that is perpendicular to an axial direction of the roller presses, a groove of a second surface is positioned between two adjacent grooves of a first surface.

10. (Original) The method of claim 9, wherein a ratio of an arc length between corresponding point of the first surface corresponding to a groove of the second surface and at least one groove of the adjacent grooves of the first surface, to an arc length between adjacent grooves of the first surface is between 0.3 and 0.5.

11. (Previously Presented) The method of claim 9, further comprising mixing hot calcined additives from multiple fluidized beds with the fine direct reduced iron and performing each step.

12. (Previously Presented) The method of claim 11, wherein the calcined additives are 3 wt% to 20 wt% of the total compacted material.

13. (Previously Presented) The method of claim 11, comprising roll pressing the fine direct molten iron at a temperature of 400 °C to 800 °C by the one pair of roller presses.

14. (Previously Presented) The method of claim 11, comprising roll pressing the fine direct molten iron at 140 bar to 250 bar by the one pair of roller presses.

15. (Previously Presented) The method of claim 11, wherein the continuous compacted material has a thickness of 3 mm to 30 mm and a density of 3.5 tons/m^3 to 4.2 tons/m^3.

16. (Previously Presented) The method of claim 11, wherein the crushed compacted material has an average grain size of 50 mm or less and an irregular shape.

17. (Previously Presented) The method of claim 16, wherein the average grain size of the crushed compacted material is 30 mm or less.

18. (Previously Presented) The method of claim 11, wherein the crushed compacted material with a grain size of 1 mm to 30 mm comprises 25 wt% to 100 wt% of the total.

19. (Withdrawn) An apparatus for manufacturing molten iron, comprising:

a charge container receiving the supply of reducing material in which hot fine direct reduced iron and calcined additives from multiple fluidized-bed reactors are mixed;

at least one pair of roller presses to which the fine direct reduced iron is supplied to undergo roll pressing, thereby producing continuous compacted material;

a crusher crushing the compacted material produced by the roller presses; and

a melter-gasifier to which is charged crushed compacted material that is crushed by the crusher,

wherein concave grooves are uniformly and continuously formed along an axial direction of the at least one pair of roller presses on an outer surface thereof, and protrusions are formed between adjacent concave grooves along a circumferential direction of the roller presses; and

wherein the at least one pair of roller presses are formed such that a protrusion of a second roller press is positioned between two adjacent protrusions of a first roller press during producing the compacted material.

20. (Withdrawn) The apparatus of claim 19, wherein the charge container comprises:

a hollow chamber positioned above an area corresponding to between the press forming rolls;

an intake pipe connected to an upper portion of the hollow chamber and that supplies reducing material thereto; and

charge members mounted to both sides of the intake pipe making an acute angle with a vertical direction of the roller presses, and that are rotatably driven in this state such that reducing material in the hollow chamber is charged to the roller presses.

21. (Withdrawn) The apparatus of claim 19, further comprising:

a cooler for bypassing the crushed compacted material and cooling the same with water; and

a storage tank for transporting and storing the compacted material cooled by the cooler.

22. (Withdrawn) The apparatus of claim 21, wherein the cooler comprises:

a first conveyor that receives the crushed compacted material and submerges the compacted material in water to cool the same, then transmits the cooled compacted material to the storage tank; and

a second conveyor on which are mounted a plurality of blades that collect crushed compacted material powder that has collected on the floor, and that supply the powder to the storage tank.

23. (Withdrawn) The apparatus of claim 19, further comprising:

a hot separator for separating compacted material among the crushed compacted material with a grain size of 30 mm or more; and

an additional crusher for re-crushing the compacted material selected by the hot separator.

24. (Withdrawn) The apparatus of claim 23, further comprising a nitrogen supply device for supplying nitrogen to the additional crusher.

25. (Withdrawn) The apparatus of claim 19, further comprising a nitrogen supply device for supplying nitrogen to the roller presses and the crusher.

26. (Withdrawn) The apparatus of claim 19, wherein the roller presses are formed such that a ratio of an arc length between a corresponding point of the first roller press corresponding to a tip of a protrusion of the second roller press and at least one tip of protrusions of the first roller press, to an arc length between the tips of adjacent protrusions of the first roller press, is between 0.3 and 0.5.

27. (Withdrawn) The apparatus of claim 19, wherein the roller presses further comprise a hydraulic press unit, and the first roller press undergoes rotation in a stationary position while the second roller press may be varied in position to adjust an interval with the first roller press by the hydraulic press unit.

28. (Withdrawn) The apparatus of claim 19, further comprising:

a dust collecting port collecting dust particles generated in the charge container, and by the roller presses and the crusher;

a wet scrubber for wet scrubbing dust particles collected at the dust collecting port; and

a dehumidifier for removing the moisture from the dust particles that are wet scrubbed by the wet scrubber.

29. (Withdrawn) The apparatus of claim 19, wherein the compacted material produced by the pressed forming rolls has a thickness of 3~30 mm and a density of 3.5~4.2 tons/m^3.

30. (Withdrawn) The apparatus of claim 19, wherein an average grain size of the crushed compacted material is 50 mm or less, and crushing is performed to irregular shapes.